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**WATER QUALITY BRANCH ACTIVITIES
IN PRINCE EDWARD ISLAND
1965-1985**

IWD-AR-WQB-86-96



**INLAND WATERS DIRECTORATE
ATLANTIC REGION
WATER QUALITY BRANCH
MONCTON, NEW BRUNSWICK**

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INLAND WATERS DIRECTORATE
ENVIRONMENT CANADA

Paul E. Belliveau
Richard A. Arseneault

Water Quality Branch
Atlantic Region
Moncton, N. B.
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A copy will be made available in French upon request

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ABSTRACT

This report gives a brief chronological overview of Water Quality Branch activities in the Province of Prince Edward Island. It is not designed to be an exhaustive treatise but only to present highlights of the work accomplished over the 1965-1985 period.

This document summarizes the background of the Water Quality Branch programs, projects and studies, explaining when and why they were initiated, how they were conducted and what type of data were generated. It elucidates how the Water Quality Branch evolved over the years in response to new policies and changing institutional needs. It was written with the expectation that reflection on past activities would germinate the seeds for future joint Federal/Provincial scientific endeavors.

RÉSUMÉ

Le présent rapport donne un bref aperçu chronologique des activités de la Direction de la qualité des eaux dans la province de L'Île du Prince-Edward. Cet ouvrage ne constitue pas une analyse détaillées des activités, mais il vise plutôt à signaler les faits saillants des travaux accomplis pendant la période 1965-1985.

Le document expose l'origine des programmes, projets et études de la Direction de la qualité des eaux; il précise également le démarrage et le pourquoi des travaux, la façon dont ils ont été menés, ainsi que le genre de données qui en sont découlées. De plus, il explique comment la Direction de la qualité des eaux s'est adaptée au cours des années aux nouvelles politiques et aux besoins variés des établissements. Il a été rédigé dans l'espoir que la rétrospective d'activités passées favorise la conclusion de futures ententes scientifiques profitables entre le gouvernement fédéral et la province.

AUTHORS' NOTE

It should be noted that this report is an update of an original document prepared by P.E. Belliveau and V.A. Komadina in 1982 entitled "Water Quality Branch Activities in Prince Edward Island: 1965-1980". The decisions to update the document was based on two factors; the first being the frequent demand for the original report which is now out of print and the second being the number of changes the Water Quality Branch has undergone over the past five years as it endeavored to respond to new and changing requirements. It is hoped that this updated version will prove even more worthwhile than the first edition.

ACKNOWLEDGEMENTS

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INTRODUCTION

The Water Quality Branch, Inland Waters Directorate, Atlantic Region, conducts water quality surveys and studies designed specifically to provide ambient water quality data and interpretive information to water resource managers and pollution control agencies. Its present role is to:

1. Provide scientific and technical information and advice to government, private agencies and the public, and to promote the wise management of the quality of waters:
 - (a) shared by Canada and the United States, and by one or more provinces and/or territories;
 - (b) on federal lands such as national parks, Indian reserves and heritage canals, and other properties and facilities where water resource management is primarily a federal responsibility;
 - (c) where there is federal responsibility such as for fisheries and wildlife;
2. Detect emerging water quality problems and to evaluate water quality issues on Canada's inland waters from a regional and national point of view.

The Branch's mandate to participate in these activities is derived from the various Federal Legislative Acts listed in Appendix I and from the Federal Policy Statement on Inland Waters (1978).

The Water Quality Branch has no regulatory or enforcement functions and its activities are limited to the inland aquatic environment.

The Water Quality Branch's principal areas of interest are:

- international and interprovincial waters;
- waters located in the territories, on federal lands or waters of significant national interests;
- waters affected by long-range transport of airborne pollutants (LRTAP);
- waters affected by toxic chemicals;
- freshwater used as supplies for human consumption;
- water quality conservation; and
- Canadian Water Quality Guidelines.

The Branch also negotiated and implements Federal- Provincial Water Quality Monitoring Agreements and provides advice, leadership and expertise in the development of Water Quality Objectives.

The data generated are used in the identification of emerging environmental problems and water quality trends, the production of

data and interpretive reports, and as a data bank for water resource managers. All data collected are stored on the Water Quality Branch's National Water Quality Data Bank (NAQUADAT) and are available to users at minimal charge.

HISTORICAL OVERVIEW

a) Industrial Waters Section

In the early 1930's, the Federal Government, recognizing the emerging significance of water quality in Canada, created the Industrial Waters Section within the Mines and Geological Branch of the Department of Mines and Technical Surveys. This action was in response to requests from Canadian Manufacturers, especially those of pulp and paper, and soap, to study the natural and treated waters of Canada.

During the 1950's and early 1960's, the Industrial Waters Section's emphasis shifted slightly to the collection of aquatic chemical data having geological significance from major bodies of water across Canada and the reporting of these data in a technical bulletin series entitled "Industrial Waters of Canada". In order to accomplish this task, Canada was divided into eighteen large drainage basins and water quality surveys were carried out at a rate of one or two basins per year. Aside from these surveys, the Section also provided operational and advisory services to other Departments on corrosion control, boiler feed-water treatment, and treatment of water supplies for non-potable use.

b) Water Quality Division

In the mid-1960's, because of its expertise in analyzing

water samples and in assessing water quality, this unit was the logical choice for expanding the role of the federal government in the field of water quality. Upon Departmental reorganization, the expanded Industrial Waters Section became the Water Quality Division within the Inland Waters Branch of the Department of Energy, Mines and Resources. The responsibilities of this new Division were to collect, interpret and disseminate data on the quality of freshwater in Canada, with the expressed purpose of identifying areas of pollution, establishing baselines of quality and monitoring these waters so that they would be properly used, managed and developed. With the establishment of a regional laboratory in Halifax (1964), which was later moved to Moncton (1966), the Water Quality Division also initiated the provision of analytical laboratory support to provincial agencies requiring water analysis. The original aim was to provide this service to the provinces only until these could develop their own laboratory capabilities. This action resulted in dividing Water Quality Division activities into two main categories: those conducted as part of the operational programs (Table 1) and those which were carried out in support of other agencies (Table 2). This report focusses only on the former type of activities.

c) Water Quality Branch

In 1971, as a result of the Department of Environment Act, the Water Quality Division was transferred to the new Department of Environment and became the Water Quality Branch of the Inland

Waters Directorate. Its assigned responsibilities were focussed on environmental concerns. In essence, its new role was to provide ambient water quality data and interpretive information to water resource managers and pollution control agencies. This information was to be employed for environmental assessment studies, pollution control legislation, assessment of the suitability of water for domestic and industrial uses, research and for input to federal/provincial and international agreements and commitments.

ACTIVITIES

The Water Quality Branch's first major monitoring effort was the International Hydrological Decade (I.H.D.) National Water Quality Monitoring Program (1965-1974). The overall aim of this UNESCO program in the field of hydrology was described as:

"... to accelerate the study of water resources and the regiment of waters with a view of their rational management in the interest of mankind; to make known the need for hydrological research and education in all countries; and to improve their ability to evaluate their resources and use them to the best advantage."

In Canada, the Water Quality Branch's aim was to establish and maintain a national water quality and pollution evaluation network and to obtain a nationwide baseline inventory of surface water

quality. In Prince Edward Island, the program consisted of monthly sampling by lay collectors at four water quality stations for a broad range of parameters. As such, the program provided useful estimates of water quality conditions at selected sites and proved helpful for long range planning. A short description of this project is given in Appendix II.

In May 1972, a joint Federal/Provincial study (Appendix III) on groundwater chemistry was launched. The aim of this project was to gather sufficient water quality data to characterize the principal aquifers of Prince Edward Island. In total one hundred and seventy-seven samples, from twelve different aquifers, were collected and analyzed. For this study, sampling was conducted by Province staff while sample analysis was performed by the Water Quality Branch laboratory in Moncton. In July of the same year, the Water Quality Branch initiated its first comprehensive survey of toxic substances in Prince Edward Island. This involved the collection of water samples from sixty-three surface water sites and the analysis of these samples for mercury, cadmium and selected organic pesticides. This survey is described in detail in Appendix IV.

When the I.H.D. National Water Quality Monitoring Program terminated in 1974, the Water Quality Branch reassessed the need to continue this type of program. The emphasis of the I.H.D. Program had been on maintaining a resource inventory but the mandate of the Water Quality Branch had been expanded when it

became part of the Department of Environment. There was now a responsibility to examine water quality in relation to a wider range of water uses. Accordingly, it was realized that the need existed for on-site field measurements and specialized sampling procedures thereby necessitating the replacement of lay collectors with qualified field staff.

In April 1974, the I.H.D. National Water Quality Monitoring Program was replaced by an expanded Water Quality Branch National Water Quality Monitoring Program (Appendix V) which, in Prince Edward Island, consisted of quarterly sampling by Branch staff at twenty-six sites. The employment of in-house staff to conduct the field work meant that the Branch could now gather field data on such parameters as dissolved oxygen, pH and specific conductance and it could also broaden its chemical, physical and biological parametric capability. As a result, the data generated by this study included major ions (calcium, magnesium, sodium, potassium, bicarbonate, sulfate and chloride), total hardness, physical parameters (pH, colour, turbidity, suspended solids, specific conductance and temperature) and biological constituents (chlorophyll a, bacteria, etc). Nutrients such as phosphorus, nitrogen, carbon and silica were also measured routinely. In addition, toxic and other substances including metals and trace elements, pesticides, phenolic materials and cyanides were periodically determined at selected sites. It should be emphasized that for this particular monitoring study, sampling stations were located

with a view to observing general overall water quality conditions in rivers and streams rather than to study local and regional conditions in detail.

Two years later (Sept. 1976), in response to water resource concerns expressed by the P.E.I. Department of Environment, and at their request, IWD undertook a water resource investigation of the Charlottetown Airport Redevelopment Project being contemplated by the Federal Ministry of Transport. The objective of this study (Appendix VI) was to assess the redevelopment of the airport in terms of its potential impact on the groundwater and surface water in the area of concern.

A review of Departmental activities in 1977-78 coincided with the development of new federal policies concerning inland waters. A number of these new policies had significant impact on Branch monitoring programs. The new federal priorities required the Branch to redefine its existing programs and to concentrate on boundary water issues. Furthermore, guidance was given as to the types of issues which should be addressed. These included identification of pollution problems, trend assessment, surveillance for water quality objectives and the assessment of the effectiveness of regulatory measures. The demand was no longer for data only but for interpretation of these data. As a first step, the routine ambient water quality monitoring sites in the Atlantic Region were considerably reduced so as to include only stations of direct federal interest. In Prince Edward Island, this meant the

termination of the National Water Quality Monitoring Program. However, in order to retain continuity of data for the reporting of regional overviews on water quality in the Atlantic Provinces, a limited water quality network was established in April 1978. This new program, called the Atlantic Region Overview Network (Appendix VII), and consisting of three stations in Prince Edward Island, was designed to retain this continuity of data and to maintain a regional inventory of baseline information for:

- (1) the periodic assessment of the quality of the Atlantic Region's aquatic environment;
- (2) the determination of gross trends in the aquatic environment; and
- (3) the fulfillment of the Water Quality Branch commitment to provide International Agencies with ocean input data.

Water samples were collected on a bimonthly basis by trained Water Resources Branch field technicians and shipped to the Moncton Laboratory for analysis of physical parameters, major ions and trace metals.

In July 1979, the Water Quality Branch implemented the first of a series of pollutant specific surveys (Appendix VIII). The aim of these surveys was to screen for specific environmental contaminants (toxic substances) covering as broad a geographical region as possible and concentrating on perceived critical areas or in areas of federal interest. In Prince Edward Island these

pollutant specific surveys were conducted annually until 1982. It should be noted however that the parameters screened varied from year to year. By the completion of this project, the following parameters had been screened: pentachlorophenols, chlorobenzenes, mirex, mercury, arsenic, and polychlorinated biphenyls.

In 1980, the Water Quality Branch initiated acid rain studies in Prince Edward Island by selecting two watersheds in the Province to form part of the Acid Rain Baseline Sampling Network (Appendix IX). The purpose of this long term study was to maintain a network of benchmark surface water stations in the Atlantic Region in order to identify temporal trends in parameters sensitive to acid rain. During the same year (1980), a second program was launched to identify and quantify the toxic chemicals in atmospheric precipitation in order to estimate its impact on inland waters in Atlantic Region (Appendix X). This program includes one station in Prince Edward Island at Ellerslie.

In 1985, the Water Quality Branch conducted a Toxic Chemical Survey Program in Prince Edward Island (Appendix XI). This program was aimed at identifying the extent of toxic substances contamination in the freshwater aquatic environment of Prince Edward Island. Specifically, its purpose was to screen for specified environmental contaminants in selected basins of the Province.

All of these projects are described in detail in the appended material. Each Appendix outlines the project title, submitter

I.D., period of record, objective(s), field sampling staff, parameters analysed, NAQUADAT station number and the approximate number of samples analyzed at each station. Corresponding station reference numbers are also given. Maps have been appended to facilitate the location of sampling sites. A complete station listing, describing the exact location of each station is presented in Table 3.

DATA AND REPORTS

Traditionally water quality data were handled by manual means, however, as the quantity of data increased, the Water Quality Branch was soon overwhelmed by manual filing and sorting methods. The need for flexibility and speed in retrieving data (in a variety of formats) also became important as the Branch started focussing on data interpretation. This led to the introduction of a computerized data handling system called NAQUADAT (National Water Quality Data Bank). NAQUADAT provides a flexible system for storing the results of environmental analyses and other pertinent information related to the samples and the sampling station, and for producing a large variety of retrieval reports, statistical analyses and graphical presentations. In general, all of the data from the projects listed in Table 1 and 2 are stored in NAQUADAT. These data are available from the Water Quality Branch Head Office in Ottawa and some are also available regionally from the Moncton Office.

Recently, the Water Quality Branch in Moncton, reacting to technological advances and responding to regional requirements for storage, management and interpretation of water quality data, acquired a VAX 11/750 computer and equipped it with the RS-1 statistical software package. This VAX 11/750 computer is also used to run the LABS-11 laboratory data management system and various other programs. Branch staff have recently developed the NABIODAT

data management system. This system will be used for the storage and processing of biological data and is in direct response to the growing biological components of the water quality monitoring and survey studies being conducted.

To date the Water Quality Branch has prepared or has participated in the preparation of nineteen reports, publications and/or presentations utilizing water quality data and aquatic information gathered by the Branch in Prince Edward Island. These are presented in Appendix XII.

OUTLOOK FOR THE FUTURE

The Water Quality Branch has conducted a number of aquatic environmental studies in Prince Edward Island over the past twenty years, however, there is still a lot of work to be done. The hydrological variability and the severity of winter, in the Province, makes the collection of field data difficult, time consuming and manpower extensive. Yet, this dynamic hydrological condition makes it necessary to maintain on-going programs in order to keep water quality information relevant to current needs.

Awareness within the scientific community and the public at large of the susceptibility of the aquatic environment to

degradation has increased over the past two decades. This has resulted in a shift of emphasis from routine ambient water quality monitoring to more problem specific studies. Analysis of Departmental priorities indicate that future Water Quality Branch activities in Prince Edward Island will probably focus on the following:

- (1) Toxic substances
- (2) Long range transport of airborne pollutants
- (3) Development of water quality objectives, and
- (4) Federal-Provincial co-operation in data acquisition, analysis, storage, interpretation and dissemination.

It is felt that through increased federal-provincial co-operation, effected by joint planning and information sharing, the future could be more productive for both levels of government. This is the opportunity we are now presented with and should be exploring in order to meet future requirements.

TABLE 1
SUMMARY OF WQB PROJECTS

1965-1985

APPENDIX #	PROJECT TITLE	SAMPLING PERIOD	STATIONS	SAMPLES ON FILE	FREQUENCY OF SAMPLING
II	I.H.D. National Water Quality Monitoring	1965-1974	4	270	Monthly
III	PEI Groundwater Study	1972-1973	12	177	Monthly
IV	PEI Surface Water Quality Survey	1972	63	63	Once
V	WQB National Water Quality Monitoring	1974-1978	26	251	4/year
VI	Charlottetown Airport Expansion Study	1976-1985	28	238	4/year
VII	Atlantic Region Overview Network	1978-1985	3	68	6/year
VIII	Pollutant Specific Survey	1979-1982	17	106	4 times
IX	Acid Rain Baseline Sampling Network	1980-1985	2	138	Monthly
X	Organics in Atmospheric Precipitation	1980-1985	1	50	Monthly
XI	Toxic Chemical Survey	1985	22	171	Irregular
TOTAL				1532	

TABLE 2
SUMMARY OF WQB SUPPORTED PROJECTS^a
1965-1975

PROJECT TITLE	CLIENT	SAMPLING PERIOD	STATIONS	SAMPLES ON FILE
PEI Environmental Control Commission	PEI-ECC	1971-1973	22	22
PEI Special Water Survey	PEI-ECC	1971-1972	10	19
CFB Summerside	DND	1971-1972	4	16
PEI Groundwater Study	PEI-DAF	1972-1973	20	157
PEI Estuary Study	PEI-ECC	1972-1975	40	1223
Fisheries Research Board	FRB	1966-1972	1	50
PEI River Studies	PEI-ECC	1972-1975	48	403
Total				1890

- a. Other projects were supported in the late sixties and early seventies but the data for these were not placed on NAQUADAT.

TABLE 3
STATION LISTING^a

NAQUADAT #	STATION REFERENCE # ^b	DESCRIPTION	# OF SAMPLES ^c
00PE01CA0001	1	Mill River at WSC Gauge in Bloomfield Park, north of St. Anthony, Prince County.	188
00PE01CA0002	2	Carruthers Brook 7.5 km West of St. Anthony at Hwy 143, Prince County.	15
00PE01CB0001	3	Dunk River at Road Bridge, 5.5 km East of Central Bedeque, Prince County.	159
00PE01CB0005	4	Dunk River at Breadalborne Hwy 231 Bridge, Prince County.	15
00PE01CB0017	5	North Brook (Lloyds Brook) North of South Freetown at Hwy Bridge, Prince County.	28
00PE01CB0023	6	Westmorland River East of Crapaud at Hwy 13 Bridge, Queens County.	1
00PE01CB0025	7	Unnamed River North of Augustine Cove below Dam, Prince County.	1
00PE01CB0026	8	Unnamed River at Road Bridge, 100 m North of Cape Traverse, Prince County.	1
00PE01CB0036	9	De Sable River at Road Bridge, South of Holms Pond, Queens County.	1
00PE01CC0002	10	North (Yorke) River near Milton Station at Hwy 246 Bridge, Prince County.	15
00PE01CC0005	11	Auld creek at Hwy 6 Bridge East of Covehead, Queens County.	1
00PE01CC0008	12	Newtown River below Dam, Queens County.	1
00PE01CC0010	13	Clyde River about 1.5 km North of Clyde River on Hwy 247, Queens County.	1

TABLE 3 cont'd.

NAQUADAT #	STATION REFERENCE #	DESCRIPTION	# OF SAMPLE
00PE01CC0012	14	Hyde (Mill) Creek from Hwy 248 Bridge East of Cornwall, Queens County.	1
00PE01CC0013	15	Ferguson Creek from Hwy 19 Bridge South of Charlottetown, Queens County.	1
00PE01CC0014	16	Fullerton Creek at Mount Herbert, Queens County.	1
00PE01CC0015	17	Mill Brook near North Rustico, Queens County.	1
00PE01CC0016	18	Winter Creek at South Rustico, Queens County.	1
00PE01CC0018	19	Matheson Creek at Hwy 6 Bridge, Queens County.	1
00PE01CC0019	20	Black River at Dam, Queens county.	1
00PE01CC0020	21	Mill Creek near covehead, Queens County.	1
00PE01CC0021	22	Green brook at Hwy 9, Queens county.	1
00PE01CC0022	23	Clark Brook at Hwy 21, Queens County.	1
00PE01CC0023	24	Pisquid River at Hwy 21, Queens county.	1
00PE01CC0024	25	Johnston River at Hwy 21, Queens County.	1
00PE01CC0025	26	Glenfinnan River near Glenfinnan, Queens county.	1
00PE01CC0036	27	West (Eliot) River from Hwy 13 Culvert, Queens County.	15
00PE01CC0037	28	West (Eliot) river at Crosby Mill, 1 km North of Bonshaw, Queens County.	15
00PE01CC0038	29	Lake of Shining Waters, National Park, Queens county.	1
00PE01CC0039	30	Winter River at Bridge behind Union Pumping Station, Queens county.	4
00PE01CC0040	31	Wrights Creek 500 m. above Andrews Pond, Queens County.	31

TABLE 3 cont'd.

NAQUADAT #	STATION REFERENCE #	DESCRIPTION	# OF SAMPLES
00PE01CC0042	32	Winter River South Branch at Union Road Culvert, Queens County.	8
00PE01CC0043	33	Malpeque Stream at Hwy 2 Culvert, West Royalty, Queens County.	4
00PE01CC0044	34	Unnamed Tributary 25 m above Union Pumping Station, Queens County.	11
00PE01CD0003	35	Morell River near Bangor at Hwy 321 Bridge, Kings County.	60
00PE01CD0004	36	Midgell River at Hwy 2, Kings County.	1
00PE01CD0005	37	Morie River at Morie, Kings county.	1
00PE01CD0006	38	St.Peters River at Burgess Pond, Kings county.	1
00PE01CD0009	39	Souris River at Gowan Brae, Kings county.	1
00PE01CD0010	40	Naufrage River at Naufrage Pond, Kings county.	1
00PE01CD0011	41	Bear River at St. Margarettes, Kings County.	1
00PE01CD0012	42	Hay River at Hwy 16, Kings county.	1
00PE01CD0013	43	Cross River at Hwy 16, Kings County.	1
00PE01CD0014	44	East Lake creek at East creek, Kings county.	1
00PE01CD0018	45	Boughton river at Bridge, approx. 1.5 km North of Bridgetown, Kings County.	2
00PE01CD0019	46	Unnamed river at Hwy 2 near Fortune Bridge, Prince County.	1
00PE01CD0022	47	West Branch Morell River 2 km below Pisquid Pond at Hwy 320 Culvert, Kings County.	4
00PE01CE0001	48	Brudnell River 1 km below Hwy 4 Bridge at WSC Gauge, Kings county.	89
00PE01CE0006	49	Vernon River at Vernon River, Queens County.	1

TABLE 3 cont'd.

NAQUADAT #	STATION REFERENCE #	DESCRIPTION	# OF SAMPLES
00PE01CE0007	50	Orwell River at Hwy 1, Queens County.	1
00PE01CE0008	51	Newtown River below dam, Queens County.	1
00PE01CE0009	52	Pinette River at Outlet, Queens County.	1
00PE01CE0010	53	Middle Creek at Roseberry, Queens County.	1
00PE01CE0011	54	Flat River at Flat River, Queens County.	1
00PE01CE0012	55	Greek River at Pleasant Point (at dam), Kings County.	1
00PE01CE0014	56	Sturgeon River (South Branch) above dam at Route 345, Kings county.	1
00PE01CE0015	57	Sturgeon River above McKinnon Pond at Hwy 317 Bridge, Kings County.	5
00PE01CE0016	58	Valleyfield River near Montague, Kings County.	1
00PE01CE0017	59	Cardigan River at Cardigan, Kings County.	1
00PE01CE0018	60	Montague River above Causeway, Kings county.	1
00PE01CE0019	61	Fox River at Wilmot, Kings county.	1
00PE01CE0020	62	Unnamed River at Hwy 1A Bridge, approx. 0.5 miles east of Pownal, Kings county.	1
01PE01CA0001 51PE01CA0001	63	Arsenaults Pond (Tignish River), 150 m from dam at center, Queens County.	1 (3)
01PE01CA0002 51PE01CA0002	64	Leards Pond (Trout River), 100 m from outfall at center, Queens County.	1 (3)
01PE01CB0001	65	Marchbank Pond on Wilmot River above Hwy 110 Bridge, Queens County.	15
01PE01CB0002 51PE01CB0002	66	Scales Pond (Dunk river) 100 m above dam at center, Prince County.	1 (3)
01PE01CB0003 51PE01CB0003	67	Wrights Pond (Bradshaw River), 150 m above dam at channel, Queens County.	1 (3)

TABLE 3 cont'd.

NAQUADAT #	STATION REFERENCE #	DESCRIPTION	# OF SAMPLES
01PE01CC0001	68	Andrews Pond at Hwy 2 Culvert, Queens County.	2
01PE01CC0002	69	Andrews Pond at Spillway (Dam), Queens County.	2
01PE01CC0004	70	Lake Verde 150 m from Southerly end of Lake at Center, Kings County.	1 (3)
01PE01CC0006	71	Officers Pond (Winter River), 300 m above dam at Widening of Pond, Queens County.	1 (3)
51PE01CC0006			
01PE01CD0001	72	Priest Pond (Lake) at Priest Pond Kings county.	1
01PE01CD0002	73	North Lake at Lakeville, Kings County.	1
01PE01CD0003	74	Black Pond (Lake) at Hwy 16, Kings county.	1
01PE01CE0001	75	Montague River near victoria Cross at dam above Hwy 320 Bridge, Kings County.	15
01PE01CE0003	76	Knox Pond (Montague River), 300 m above dam at center, Kings County.	1 (3)
51PE01CE0003			
02PE01CA0015	77	Mill River estuary 5 km SW of Alberton at Hwy 12 Bridge, Prince County.	10
02PE01CA0016	78	Tignish River estuary at Tignish from Hwy 153 Bridge, Prince County.	4
02PE01CA0017	79	Miminegash River estuary near Miminegash from Hwy 14 Bridge, Prince County.	4
02PE01CA0018	80	Trout River at Carleton at Hwy 2 Bridge, Prince County.	15
02PE01CA0019	81	Trout River near Tyne Valley at Hwy 12 Bridge, Prince County.	4
02PE01CA0020	82	Mill River 1 km below Hwy 12 Bridge at Center of Estuary, Prince County.	3 (3)
52PE01CA0020			
02PE01CB0014	83	Barboro Weit river estuary from Road Bridge, Clermont Statior, Prince County.	4
02PE01CB0015	84	Dunk River estuary Central Bedeque from Hwy 110 Bridge, Prince County.	15
02PE01CB0017	85	Tryon River at Tryon at Route 10 Prince County.	1

TABLE 3 cont'd.

NAQUADAT #	STATION REFERENCE #	DESCRIPTION	# OF SAMPLES
02PE01CC0039	86	Hunter River at Hwy 6 Bridge, New Glasgow, Queens County.	5
02PE01CC0045	87	Whealthy River at Wheatly River, Queens County.	5
02PE01CC0046	88	North (Yorke) River at Causeway, Queens county.	16
02PE01CC0047	89	West River at Bonshaw, Kings County.	1
02PE01CC0049	90	Covehead bay at Bay Shore Drive Queens county.	1
02PE01CC0050	91	Eller's creek at T.C.H., Queens County.	1
02PE01CC0051	92	Hillsborough River at Mt. Stewart, Queens County.	1
02PE01CC0052	93	Winter River at Carron Bay, Queens County.	1
02PE01CC0054	94	Whealthy River at Cymbria, Queens County.	1
02PE01CC0056 52PE01CC0056	95	North River at Center 100 m. above Cable crossing, Queens County.	3 (3)
02PE01CD0011	96	Boughton River at Bridgetown, Kings county.	1
02PE01CD0013	97	Fortune River at Fortune Bridge, Kings County.	1
02PE01CE0024	98	Montague river estuary at Montague from Hwy 4 Bridge, Kings County.	4
02PE01CE0040	99	Valleyfield River Estuary near Montague at Hwy 326 Bridge, Kings County.	15
02PE01CE0045	100	Seal River at Hwy 1, Queens County.	1
02PE01CE0048	101	Murray River at Murray River, Kings county.	1
03PE01CB0005 53PE01CB0005	102	Malpeque Bay 1850 m S61 ^Q W from boat launching site at end of Beech Point Road, Prince County.	6 (6)

NAQUADAT #	STATION REFERENCE #	DESCRIPTION	# OF SAMPLES
03PE01CB0006 53PE01CB0006	103	Summerside Harbour 100 m S25°W from SW corner of Queen's Wharf, Prince County.	6 (6)
03PE01CC0005 53PE01CC0005	105	Charlottetown Harbour from Southwestern Corner of MOT Marine Terminal, Queens County.	6 (6)
03PE01CE0002 53PE01CE0002	106	Georgetown Harbour in center of Channel between Hightmans Pt and Thrumcap Split, Kings county.	3 (3)
10PE01CA0004	107	Mt. Pleasant Well, Prince county.	16
10PE01CA0005	108	Bloomfield Station Well, Prince County.	13
10PE01CB0016	109	Kensington well, Prince county.	16
10PE01CB0017	110	Summerside Town Well #7, Prince County.	17
10PE01CC0021	111	Auburn Well, Queens County.	15
10PE01CC0022	112	Cumberland Well #8, Queens county.	15
10PE01CC0023	113	New Dominion Well #23A, Prince County.	12
10PE01CC0024	114	Hunters River Well, Queens County.	13
10PE01CC0025	115	Charlottetown Water Supply, Malpeque Pumping Station (from tap) West Royalty, Queens County.	23
10PE01CC0027	116	Charlottetown airport Test Well #1A, Queens County.	12
10PE01CC0028	117	Charlottetown Airport Test Well #8, Queens County.	21
10PE01CC0029	118	Charlottetown Airport Test Well #9, Queens County.	2
10PE01CC0030	119	Charlottetown Airport Test Well #10, Queens County.	13

TABLE 3 cont'd.

NAQUADAT #	STATION REFERENCE #	DESCRIPTION	# OF SAMPLES
10PE01CC0031	120	Charlottetown Airport Test Well #1, Queens County.	1
10PE01CC0032	121	Charlottetown Airport Test Well #2, Queens County.	7
10PE01CC0033	122	Charlottetown Airport Test Well #3, Queens County.	6
10PE01CC0034	123	Charlottetown Airport Test Well #4, Queens County.	3
10PE01CC0035	124	Charlottetown Airport Test Well #5, Queens County.	9
10PE01CC0036	125	Charlottetown Airport Test Well #6, Queens County.	4
10PE01CC0037	126	Charlottetown Airport Test Well #7, Queens County.	4
10PE01CC0039	127	Charlottetown Airport Test Well #A, Queens County.	1
10PE01CC0040	128	Charlottetown Airport Test Well #B, Queens County.	8
10PE01CC0041	129	Charlottetown Airport Test Well #C, Queens County.	2
10PE01CC0042	130	Charlottetown Airport Test Well #D, Queens County.	3
10PE01CC0043	131	Charlottetown Airport Test Well #E, Queens County.	8
10PE01CC0044	132	Union Pumping Station, Charlottetown Water Supply, Queens County.	9
10PE01CC0045	133	Brackley Road Pumping Station Charlottetown Water Supply, Queens County.	8
10PE01CD0001	134	St. Charles Well, Kings County.	15
10PE01CE0005	135	Caledonia Well, Queens County.	12
10PE01CE0006	136	Georgetown Well, Kings County.	15
12PE01CC0001	137	Charlottetown Airport Test Well #12 (Piezometer = 1-Bottom) at CrashRoute Easterly End of Secondary Runway Depth - 33.5 m, Queens County.	10

TABLE 3 cont'd.

NAQUADAT #	STATION REFERENCE #	DESCRIPTION	# OF SAMPLES
12PE01CC0002	138	Charlottetown Airport Test Well = 12 (Piezometer = 2-Middle) at Crash Route Easterly End of Secondary Runway Depth - 25.3 m, Queens County.	10
12PE01CC0003	139	Charlottetown Airport Test Well = 12 (Piezometer = 3-Tap) at Crash Route Easterly End of Secondary Runway Depth - 25.3 m, Queens County.	10
33PE01CA0001	140	Precipitation sample collector at Ellerslie Fisheries Research Station	50

- (a) New stations established in 1985 are listed in Table 4.
- (b) Refers to the station number used to locate sites on accompanying maps.
- (c) Number in brackets, used in this column, refers to the number of sediment samples collected and analyzed.

TABLE 4
NEW STATION LISTING^a

NAQUADAT #	STATION REFERENCE #	DESCRIPTION	# OF ^c SAMPLES
00PE01CB0041	1	Southwest Brook, 50 m. above Middleton Pond, Prince County.	7
00PE01CB0042	2	Southwest Brook at Outfall of Middleton Pond, Prince County.	9
00PE01CB0043	3	Wilmot River at Hwy 109 Culvert, Prince County.	3
00PE01CB0044	4	Wilmot River, 300 m below Hwy 109 Bridge, Prince County.	3
01PE01CB0002	5(66) ^b	Scales Pond, 100 m above Dam, Prince County.	4
01PE01CB0005 51PE01CB0005	6	Middleton Pond at Depression, 200 m above dam, Prince County.	1 (3)
01PE01CB0014 51PE01CB0014	7	Scales Pond at Unnamed Tributary 400 m from Headlands of the Main Pond, Prince County.	5 (15)
01PE01CB0015 51PE01CB0015	8	Scales Pond, 600 m above Dam, Prince County.	5 (15)
01PE01CB0016 51PE01CB0016	9	Scales Pond, 1.5 km above Dam just above Confluence of Upper Tributary, Prince County.	5 (15)
51PE01CB0006	10	Middleton Pond, 400 m above Dam at Center, Prince County.	(15)
51PE01CB0007	11	Middleton Pond, 400 m above Dam, and 4 m from Left Bank, Prince County.	(3)
51PE01CB0008	12	Middleton Pond, 250 m above Dam, and 4 m from Right Bank, Prince County.	(3)
51PE01CB0009	13	Middleton Pond, 250 m above Dam at Center, Prince County.	(15)
51PE01CB0010	14	Middleton Pond, 250 m above Dam and 4 m from Left Bank, Prince County.	(3)

TABLE 4 cont'd.

NAQUADAT #	STATION REFERENCE #	DESCRIPTION	# OF SAMPLES
51PE01CB0011	15	Middleton Pond, 100 m above Dam and 4 m from Right Bank, Prince County.	(3)
51PE01CB0012	16	Middleton Pond, 100 m above Dam at Center, Prince county.	(15)
51PE01CB0013	17	Middleton Pond, 100 m above Dam, and 4 m from Left Bank, Prince County.	(3)
90PE01CB0003	18	Scales Pond, 600 m above Dam, 5 m from Right Bank, Prince County.	5 (Forage Fish)
90PE01CB0004	19	Scales Pond at Unnamed Tributary, 400 m from Headlands of the Main Pond (2 m from Left Bank), Prince County.	5 (Forage Fish)
90PE01CB0014	20	Middleton Pond, 50 m above Dam (2 m from Left Bank), Prince County.	5 (Forage Fish)
11PE01CB0001	21	Seepage Spring #1, at Left Bank of Wilmot River, 200 m below Hwy 109, Prince County.	3
11PE01CB0002	22	Seepage Spring #2, at Left Bank of Wilmot River, 250 m below Hwy 109, Prince County.	3

- a = These stations were established for the Toxic Chemical Program (1985)
- b = This station was established before 1985 and was given the station reference number 66 in Table 3.
- c = Number in brackets, used in this column, refers to the number of bottom sediment samples collected and analyzed.

APPENDIX I

FEDERAL LEGISLATIVE ACTS RELATED TO WATER

- British North America Act
- Boundary Waters Treaty Act (1909)
- International River Improvement Act (1955)
- Canada Water Act (1970)
- Northern Inland Waters Act (1972)
- Arctic Waters Pollution Prevention Act (1972)
- Fisheries Act (amended in 1977)
- Canada Shipping Act
- Navigable Waters Protection Act
- Department of Environment Act
- Environmental Contaminants Act (1975)
- National Parks (Canada) Act
- National Harbours Act
- Migratory Birds Convention Act (1916)
- Government Organization Act (1979)

APPENDIX II

PROJECT DESCRIPTION

WATER QUALITY BRANCH

ATLANTIC REGION

PROJECT TITLE: I.H.D. National Water Quality Monitoring

SUBMITTER I.D.: 0001

PERIOD: April 1965 to March 1974

OBJECTIVE: To establish and maintain a water quality and pollution evaluation network in Prince Edward Island and to obtain a province-wide baseline inventory of surface water quality data.

FIELD SAMPLING: Lay collectors

PARAMETERS ANALYZED: Physical parameters, major ions, nutrients and metals

STATIONS SAMPLED:

NAQUADAT #	APPROX. # OF SAMPLES ANALYZED	STATION REFERENCE ^a #
00PE01CA0001	86	1
00PE01CB0001	72	3
00PE01CE0001	84	48
00PE01CB0017	28	5

a = For detailed location of stations, refer to Map #1.

APPENDIX III
PROJECT DESCRIPTION
WATER QUALITY BRANCH
ATLANTIC REGION

PROJECT TITLE: Prince Edward Island Groundwater Study

SUBMITTER I.D.: 0136

PERIOD: May 1972 to september 1973

OBJECTIVE: To gather sufficient water quality data to characterize the principle aquifers of Prince Edward Island.

FIELD SAMPLING: Provincial Government Staff

PARAMETERS ANALYZED: Physical parameters and major ions

STATIONS SAMPLED:

NAQUADAT #	APPROX. # OF SAMPLES ANALYZED	STATION REFERENCE ^a #
10PE01CD0001	15	134
10PE01CC0021	15	111
10PE01CE0005	12	135
10PE01CC0022	15	112
10PE01CC0023	12	113
10PE01CC0024	13	114
10PE01CB0016	16	109
10PE01CA0004	16	107
10PE01CA0005	13	108
10PE01CB0017	17	110
10PE01CC0025	18	115
10PE01CE0006	15	136

a = For detailed location of stations, refer to Map #2.

APPENDIX IV
PROJECT DESCRIPTION
WATER QUALITY BRANCH
ATLANTIC REGION

PROJECT TITLE: Prince Edward Island Surface Water Quality Survey

SUBMITTER I.D.: 0125

PERIOD: July 1972

OBJECTIVE: To determine levels of mercury, cadmium and selected organic pesticides in Prince Edward Island surface waters.

FIELD SAMPLING: Water Quality Branch staff

PARAMETERS ANALYZED: Mercury, cadmium, p,p'-DDT, o,p-DDT, p,p'-TDE, p,p'-DDE, p,p'-methoxychlor, heptachlor, heptachlor epoxide, endosulfan, chlordane, BHC, (lindane), aldrin, endrin, dieldrin, 2,4-D, 2,4,5-T

STATIONS SAMPLED:

NAQUADAT #	APPROX. # OF SAMPLES ANALYZED	STATION REFERENCE #
00PE01CB0023	1	6
00PE01CB0025	1	7
00PE01CB0026	1	8
00PE01CB0036	1	9
00PE01CC0005	1	11
00PE01CC0010	1	13
00PE01CC0012	1	14
00PE01CC0013	1	15
00PE01CC0014	1	16
00PE01CC0015	1	17
00PE01CC0016	1	18
00PE01CC0018	1	19
00PE01CC0019	1	20
00PE01CC0020	1	21
00PE01CC0021	1	22
00PE01CC0022	1	23

APPENDIX IV cont'd.

NAQUADAT #	APPROX. # OF SAMPLES ANALYZED	STATION REFERENCE #
00PE01CC0023	1	24
00PE01CC0024	1	25
00PE01CC0025	1	26
00PE01CC0038	1	29
00PE01CD0003	1	35
00PE01CD0004	1	36
00PE01CD0005	1	37
00PE01CD0006	1	38
00PE01CD0009	1	39
00PE01CD0010	1	40
00PE01CD0011	1	41
00PE01CD0012	1	42
00PE01CD0013	1	43
00PE01CD0014	1	44
00PE01CD0019	1	46
00PE01CE0001	1	48
00PE01CE0006	1	49
00PE01CE0007	1	50
00PE01CE0008	1	12
00PE01CE0009	1	52
00PE01CE0010	1	53
00PE01CE0011	1	54
00PE01CE0012	1	55
00PE01CE0014	1	56
00PE01CE0015	1	57
00PE01CE0016	1	58
00PE01CE0017	1	59
00PE01CE0018	1	60
00PE01CE0019	1	61
00PE01CE0020	1	62
01PE01CD0001	1	72
01PE01CD0002	1	73
01PE01CD0003	1	74
02PE01CB0017	1	85
02PE01CC0039	1	86
02PE01CC0045	1	87
02PE01CC0046	1	88
02PE01CC0047	1	89
02PE01CC0049	1	90
02PE01CC0050	1	91
02PE01CC0052	1	92
02PE01CC0054	1	93
02PE01CD0011	1	94
02PE01CD0013	1	96
02PE01CE0045	1	97
02PE01CE0048	1	100
		101

NOTE: No map included

APPENDIX V

PROJECT DESCRIPTION

WATER QUALITY BRANCH

ATLANTIC REGION

PROJECT TITLE: Water Quality Branch National Water Quality Monitoring

SUBMITTER I.D.: 0003

PERIOD: April 1974 to March 1978

OBJECTIVE: To collect, analyze and store background surface water quality data for future interpretation.

FIELD SAMPLING: Water Quality Branch

PARAMETERS ANALYZED: Physical parameters, major ions, nutrients, metals and toxic substances

STATIONS SAMPLED:

NAQUADAT #	APPROX. # OF SAMPLES ANALYZED	STATION REFERENCE ^a #
00PE01CA0001	15	1
00PE01CA0002	15	2
00PE01CB0005	15	4
00PE01CC0002	15	10
00PE01CC0036	15	27
00PE01CC0037	15	28
00PE01CC0039	4	30
00PE01CD0003	15	35
00PE01CD0018	2	45
00PE01CD0022	4	47
00PE01CE0001	4	48
00PE01CE0015	4	57
01PE01CB0001	15	65
01PE01CE0001	15	75
02PE01CA0015	10	77
02PE01CA0018	15	80
02PE01CA0016	4	78
02PE01CA0017	4	79
02PE01CA0019	4	81

APPENDIX V cont'd.

NAQUADAT #	APPROX. # OF SAMPLES ANALYZED	STATION REFERENCE #
02PE01CB0014	4	83
02PE01CB0015	15	84
02PE01CC0039	4	86
02PE01CC0045	4	87
02PE01CC0046	15	88
02PE01CE0024	4	98
02PE01CE0040	15	99

a = For detailed location of stations, refer to Map #3.

APPENDIX VI
PROJECT DESCRIPTION
WATER QUALITY BRANCH
ATLANTIC REGION

PROJECT TITLE: Charlottetown Airport Expansion Study

SUBMITTER I.D.: 0243 (0120)

PERIOD: September 1976 to 1985

OBJECTIVE: To assess the impact of redeveloping the Charlottetown Airport on both surface and groundwater resources in the area.

FIELD SAMPLING: Water Quality Branch and Water Resource Branch staff

PARAMETERS ANALYZED: Field measurements, physical parameters, major ions, nutrients, urea, phenols and petroleum hydrocarbons

STATIONS SAMPLED:

NAQUADAT #	APPROX. # OF SAMPLES ANALYZED	STATION REFERENCE ^a #
00PE01CC0040	31	31
00PE01CC0042	19	32
00PE01CC0043	4	33
00PE01CC0044	11	34
01PE01CC0001	2	68
01PE01CC0002	2	69
10PE01CC0025	5	115
10PE01CC0027	12	116
10PE01CC0028	21	117
10PE01CC0029	13	118
10PE01CC0030	13	119
10PE01CC0031	1	120
10PE01CC0032	7	121
10PE01CC0033	6	122
10PE01CC0034	3	123
10PE01CC0035	9	124
10PE01CC0036	4	125
10PE01CC0037	4	126

APPENDIX VI cont'd.

NAQUADAT #	APPROX. # OF SAMPLES ANALYZED	STATION REFERENCE #
10PE01CC0039	1	127
10PE01CC0040	8	128
10PE01CC0041	2	129
10PE01CC0042	3	130
10PE01CC0043	8	131
10PE01CC0044	9	132
10PE01CC0045	8	133
12PE01CC0001	10	137
12PE01CC0002	10	138
12PE01CC0003	10	139

a = For detailed location of stations, refer to Map #4.

APPENDIX VII
PROJECT DESCRIPTION
WATER QUALITY BRANCH
ATLANTIC REGION

PROJECT TITLE: Atlantic Region Overview Network

SUBMITTER I.D.: 0099

PERIOD: April 1978 to 1985

OBJECTIVE: To collect and analyze aquatic environmental quality data in order to maintain a Regional inventory of baseline information for:

- (i) the periodic assessment of the quality of the aquatic environment;
- (ii) the determination of gross trends in the aquatic environment; and
- (iii) the fulfillment of our commitment to supply international agencies with ocean input data.

FIELD SAMPLING: Water Resources Branch staff

PARAMETERS ANALYZED: Physical parameters, major ions, nutrients and metals

STATIONS SAMPLED:

NAQUADAT #	APPROX. # OF SAMPLES ANALYZED	STATION REFERENCE ^a #
00PE01CA0001	12	1 ^b
00PE01CB0001	12	3 ^b
00PE01CD0003	38	35

a = For detailed location of stations, refer to Map #5.

b = These two stations became part of the Acid Rain Baseline Sampling Network in April 1980 (Appendix IX)

APPENDIX VIII

PROJECT DESCRIPTION

WATER QUALITY BRANCH

ATLANTIC REGION

PROJECT TITLE: Pollutant Specific Survey

SUBMITTER I.D.: 0211

PERIOD: July 1979 to October 1982

OBJECTIVE: To locate, characterize and quantify the extent of contamination by toxic substances in the aquatic environment.

FIELD SAMPLING: Water Quality Branch staff

PARAMETERS ANALYZED:

Water - Arsenic, lead, mercury, chlorobenzenes, mirex, pentachlorophenol, phthalate esters, triaryl phosphate, PAH, PCB, and Carbofuran

Bottom Sediments - Cadmium, mercury, lead, mirex, chlorobenzenes, phthalate esters, PAH, PCB, Carbofuran, Endrin, Guthion, 2,4-D, 2,4,5-T, MCPA and Atrazine

Note: Some of these parameters were not analyzed every year.

STATIONS SAMPLED:

NAQUADAT #	APPROX. # OF SAMPLES ANALYZED	STATION REFERENCE ^a #
00PE01CA0001	6 (water)	1
00PE01CB0001	6 (water)	3
00PE01CD0003	6 (water)	35
01PE01CA0001	1 (water)	63
51PE01CA0001	3 (sediment)	
01PE01CA0002	1 (water)	64
51PE01CA0002	3 (sediment)	
01PE01CB0002	1 (water)	66
51PE01CB0002	3 (sediment)	
01PE01CB0003	1 (water)	67
51PE01CB0003	3 (sediment)	
01PE01CC0004	1 (water)	70
51PE01CC0004	3 (sediment)	
01PE01CC0006	1 (water)	71
51PE01CC0006	3 (sediment)	
01PE01CE0003	1 (water)	76
51PE01CE0003	3 (sediment)	
02PE01CA0020	3 (water)	82
52PE01CA0020	3 (sediment)	
02PE01CC0056	3 (water)	95
52PE01CC0056	3 (sediment)	
03PE01CB0005	6 (water)	102
53PE01CB0005	6 (sediment)	
03PE01CB0006	6 (water)	103
53PE01CB0006	6 (sediment)	
03PE01CC0005	6 (water)	105
53PE01CC0005	6 (sediment)	
03PE01CE0002	3 (water)	106
53PE01CE0002	3 (sediment)	

a = For detailed location of stations, refer to Map #6.

APPENDIX IX
PROJECT DESCRIPTION
WATER QUALITY BRANCH
ATLANTIC REGION

PROJECT TITLE: Acid Rain Baseline Sampling Network

SUBMITTER I.D.: 0099

PERIOD: April 1980 to 1985

OBJECTIVE: To maintain a network of benchmark surface water stations in selected watersheds in order to identify temporal trends of acid sensitive parameters.

FIELD SAMPLING: Water Resources Branch staff

PARAMETERS ANALYZED: Field measurements, physical parameters, major ions, iron, manganese, zinc and aluminum

STATIONS SAMPLED:

NAQUADAT #	APPROX. # OF SAMPLES ANALYZED	STATION REFERENCE ^a #
00PE01CA0001	69	1
00PE01CB0001	69	3

a = For detailed location of stations refer to Map #7.

APPENDIX X
PROJECT DESCRIPTION
WATER QUALITY BRANCH
ATLANTIC REGION

PROJECT TITLE: Organics in Atmospheric Precipitation
SUBMITTER I.D.: 0162
PERIOD: October 1980 to 1985
OBJECTIVE: Obtain data on the quantity of atmospheric contributions of toxic chemicals to the inland waters of the Atlantic Region.
FIELD SAMPLING: Sampler maintained by Fisheries and Oceans
PARAMETERS ANALYZED: Organochlorine pesticide and PCB's
STATIONS SAMPLED:

NAQUADAT #	APPROX. # OF SAMPLES ANALYZED	STATION REFERENCE ^a #
33PE01CA0001	50	140

a = For detailed location of station, refer to Map #8.

APPENDIX XI

PROJECT DESCRIPTION

WATER QUALITY BRANCH

ATLANTIC REGION

PROJECT TITLE: Toxic Chemical Survey

SUBMITTER I.D.: 0211

PERIOD: 1985

OBJECTIVES: To locate, characterize and quantify the extent of contamination by toxic substances in the aquatic environment, thereby providing information which can be used for the planning, development and implementation of preventive measures, controls, and clean up. Specifically, to screen for specific environmental contaminants in selected basins in Prince Edward Island.

FIELD SAMPLING: Water Quality Branch Staff

PARAMETERS ANALYZED:

- a) Water - Major Ions, physical parameters, nutrients, OC-PCB's, OP's, Carbamates, Triazines
- b) Bottom Sediments - OC-PCB's, Carbamates, Triazines, OP's, 2,4-D, 2,4,5-T, particle size
- c) Fish - OC-PCB's, Carbamates, Triazines, OP's, 2,4-D, 2,4,5-T

STATIONS SAMPLED:

NAQUADAT #	APPROX. # OF SAMPLES ANALYSED	STATION REFERENCE ^a #
00PE01CB0041	7	1
00PE01CB0042	9	2
00PE01CB0043	3	3
00PE01CB0044	3	4

APPENDIX XI cont'd.

NAQUADAT #	APPROX. # OF ^b SAMPLES ANALYSED	STATION REFERENCE #
01PE01CB0005 51PE01CB0005	1 (3)	6
01PE01CB0014 51PE01CB0014	5 (15)	7
01PE01CB0015 51PE01CB0015	5 (15)	8
01PE01CB0016 51PE01CB0016	5 (15)	9
51PE01CB0006	(15)	10
51PE01CB0007	(3)	11
51PE01CB0008	(3)	12
51PE01CB0009	(15)	13
51PE01CB0010	(3)	14
51PE01CB0011	(3)	15
51PE01CB0012	(15)	16
51PE01CB0013	(3)	17
90PE01CB0003	5 (Forage Fish)	18
90PE01CB0004	5 (Forage Fish)	19
90PE01CB0014	5 (Forage Fish)	20
11PE01CB0001	3	21
11PE01CB0002	3	22

a = For detailed location of stations refer to Map #9.

b = Number in brackets used in this column refers to the number of bottom sediment samples collected and analysed.

APPENDIX XII

LIST OF REPORTS, PUBLICATIONS AND/OR PRESENTATIONS

- (1) "Surface Water Quality in Canada - An Overview"; Water Quality Branch, Inland Waters Directorate, Ottawa, Ont. (1977).
- (2) "Water Quality Data - Prince Edward Island: 1961-1973"; Water Quality Branch, Inland Waters Directorate, Ottawa, Ont. (1977).
- (3) "Interim Report, Phase I: Water Resources Assessment - Proposed Expansion of Charlottetown Airport"; Vol. 1, Inland Waters Directorate, Atlantic Region, Halifax, N . S . , July (1978).
- (4) "Interim Report, Phase I: Water Resources Assessment - Proposed Expansion of Charlottetown Airport"; Vol. 2, Inland Waters Directorate, Atlantic Region, Halifax, N.S., July (1978).
- (5) "Water Quality Interpretive Report - Prince Edward Island: 1961-1973"; R.N. McNeely and V.P. Neimanis, Water Quality Branch, Inland Waters Directorate, Ottawa, Ont. (1978).

APPENDIX XII cont'd.

- (6) "Charlottetown Airport Redevelopment Project - Water Resources Assessment"; 81-WPMB-5, Inland Waters Directorate, Atlantic Region, Halifax, N.S., Apr. (1981).
- (7) "Toxic Substances in the Environment"; T.L. Pollock, presented to Science Council of N.B. Teachers' Association, Mount Allison University, Sackville, N.B., May 8 (1981).
- (8) "Acid Precipitation Sensitivity of Canada's Atlantic Provinces"; T.A. Clair, J.P. Witteman and S.H. Whitlow, I W D Technical Bulletin No. 124, Water Quality Branch, Moncton, N.B. (1981).
- (9) "PCB Contamination of Ellerslie, Prince Edward Island - Interim Report"; G.L. Brun and H.S. Bailey, Water Quality Branch, Inland Waters Directorate, Atlantic Region, Moncton, N.B., Dec. (1981).
- (10) "Water Quality Branch Activities in Prince Edward Island: 1965-1980"; P.E. Belliveau and V.A. Komadina, IWD-AR-WQB-82-27, Water Quality Branch, Inland Waters Directorate, Atlantic Region, Moncton, N.B., May 31 (1982).

APPENDIX XII cont'd.

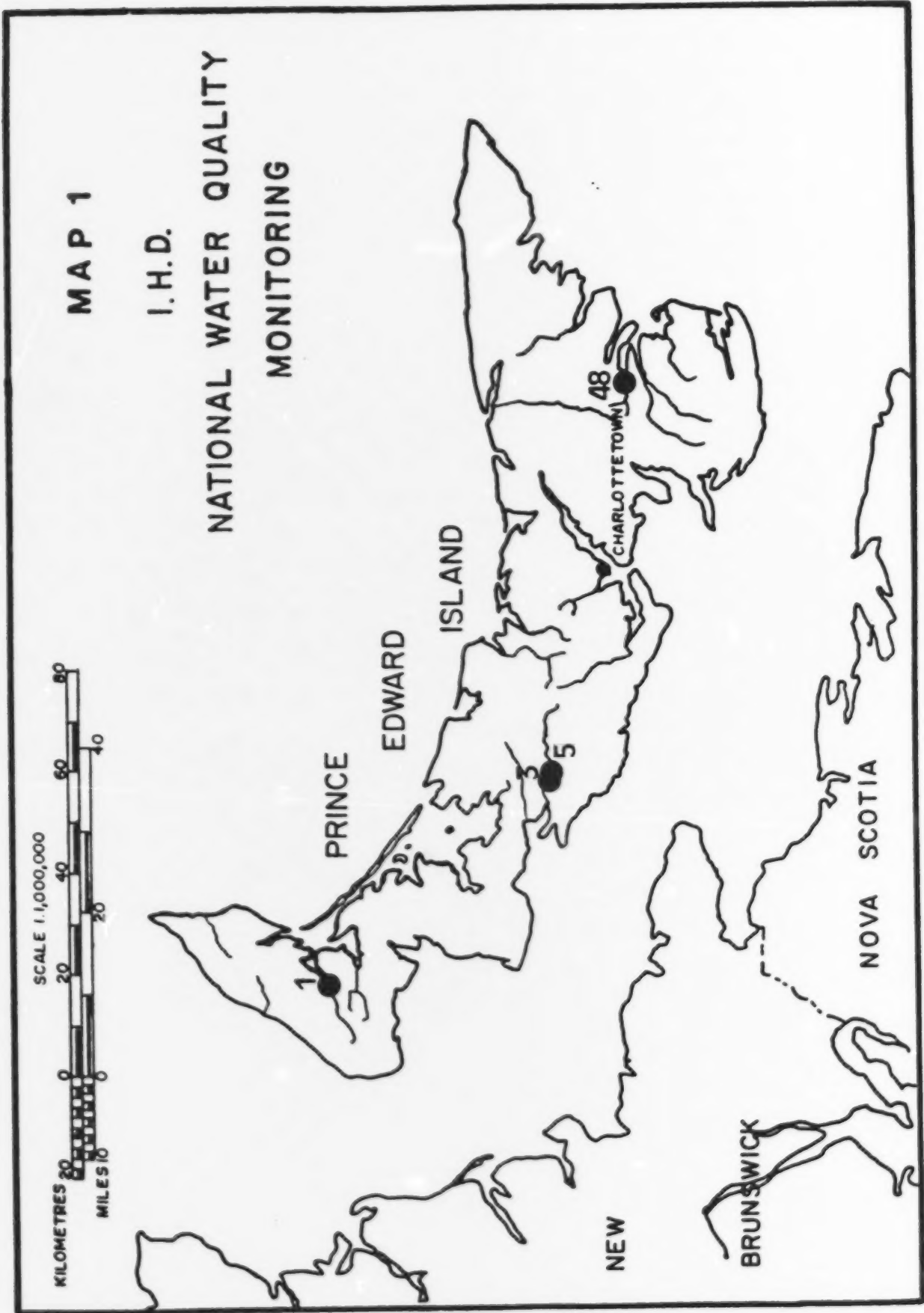
- (11) "Trends in pH, Calcium and Sulfate of Rivers in Atlantic Canada"; T.A. Clair and P.H. Whitfield, Limnol. Oceanogr. 28(1), 160 (1983).
- (12) "Survey of Toxic Inorganic Constituents in the Atlantic Region's Aquatic Environment (1979-81)"; P.E. Belliveau and H.S. Bailey, IWD-AR-WQB-83-40, Water Quality Branch, Inland Waters Directorate, Atlantic Region, Moncton, N.B., March 15 (1983).
- (13) "Data Summary Report for Trace Organic Contaminants in Precipitation Collected at Kejimikujik National Park, N.S. and Ellerslie, P.E.I. during 1982"; G.L. Brun, IWD-AR-WQB-83-44, Water Quality Branch, Inland Waters Directorate, Atlantic Region, Moncton, N.B., May 12 (1983).
- (14) "Survey of Toxic Organic Constituents in the Atlantic Region's Aquatic Environment (1979-81)"; H.S. Bailey and G.D. Howell, IWD-AR-WQB-83-48, Water Quality Branch, Inland Waters Directorate, Atlantic Region, Moncton, N.B., Oct. 19 (1983).

APPENDIX XII cont'd.

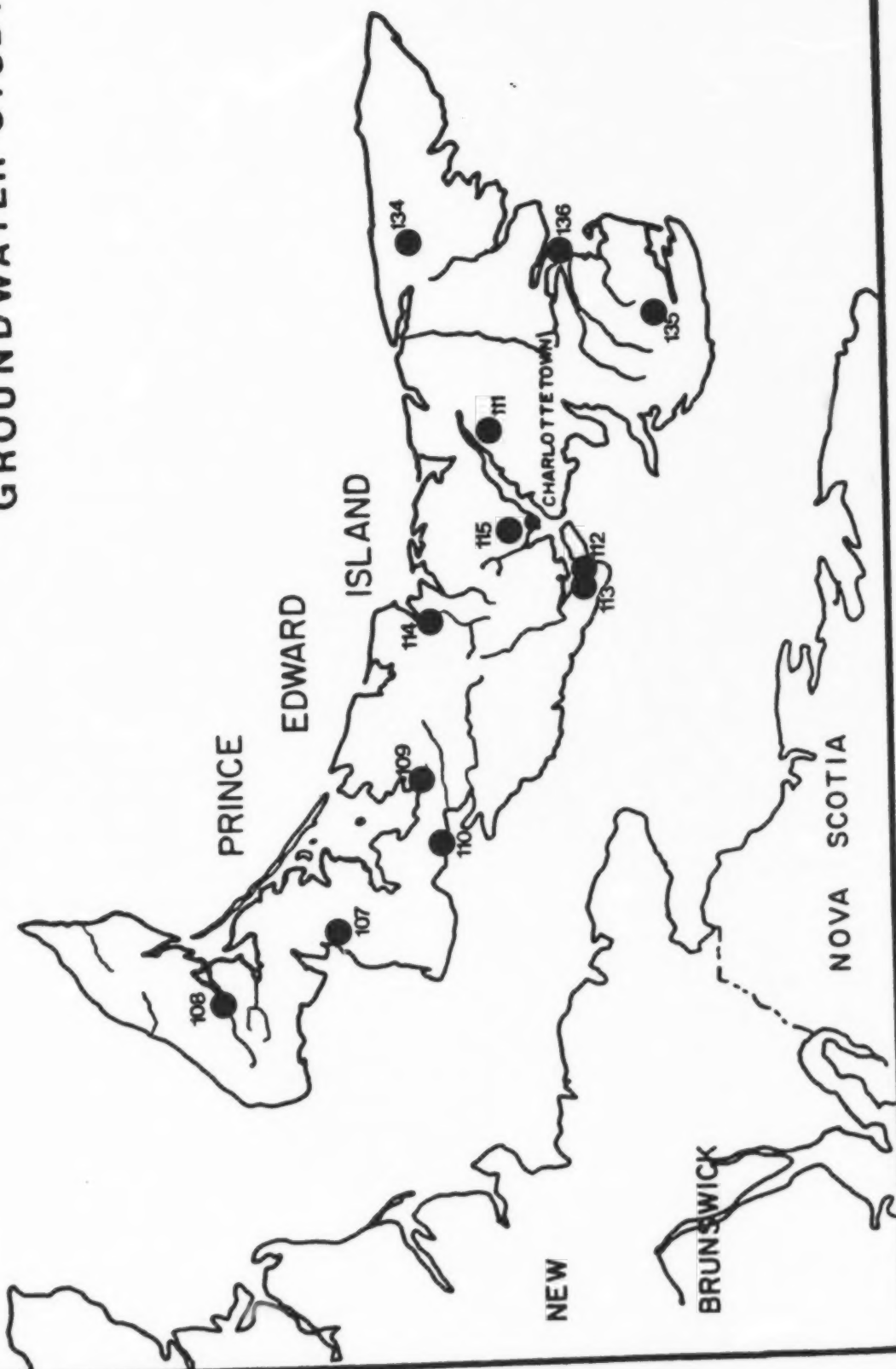
- (15) "A PCB Survey of Winter Snowmelt in Prince Edward Island: 1981-82"; G.L. Brun and H.S. Bailey, IWD-AR-WQB-84-54, Water Quality Branch, Inland Waters Directorate, Atlantic Region, Moncton, N.B., Jan. 5 (1984).
- (16) "Survey of Toxic Constituents in the Atlantic Region's Aquatic Environment - 1982"; H.S. Bailey, IWD-AR-WQB-84-55, Water Quality Branch, Inland Waters Directorate, Atlantic Region, Moncton, N.B., Feb. (1984).
- (17) "Data Summary Report for Trace Organic Contaminants in Precipitation Collected at Kejimikujik National Park, N.S., and Ellerslie, P.E.I. During 1983"; G.L. Brun, IWD-AR-WQB-84-63, Water Quality Branch, Inland Waters Directorate, Atlantic Region, Moncton, N.B., May 8 (1984).
- (18) "Field Quality Control/Quality Assurance Program. Results of 1984/85 Sequential Triplicate Sampling"; R.A. Arseneault and G.D. Howell, IWD-AR-WQB-85-78, Water Quality Branch, Inland Waters Directorate, Atlantic Region, Moncton, N.B., March 31 (1985).

APPENDIX XII cont'd.

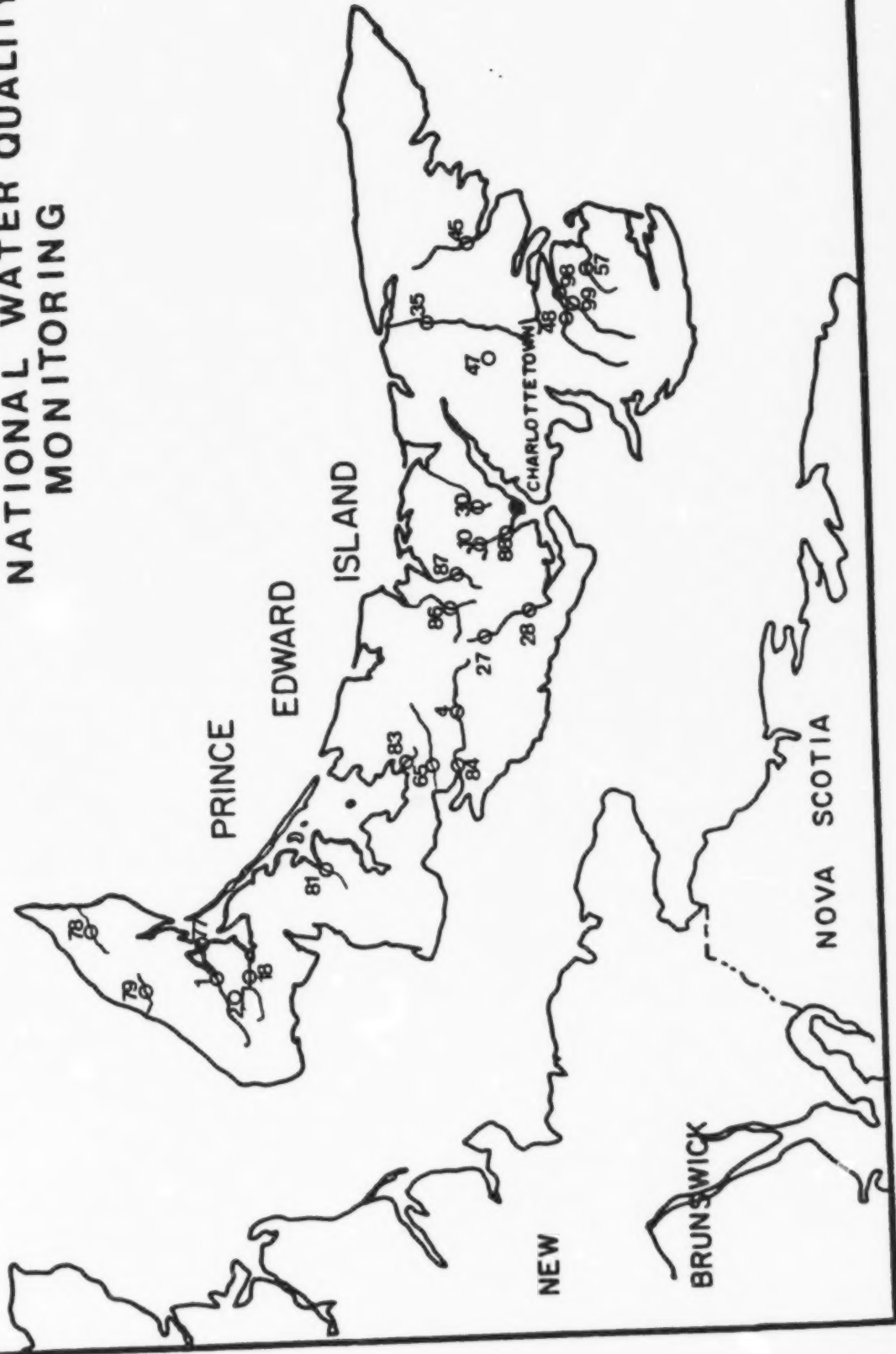
- (19) "Data Summary Report on Trace Organic Contaminants in Atlantic Region Precipitation During 1984"; G.L. Brun, IWD-AR-WQB-85-84, Water Quality Branch, Inland Waters Directorate, Atlantic Region, Moncton, N.B., June 6 (1985).



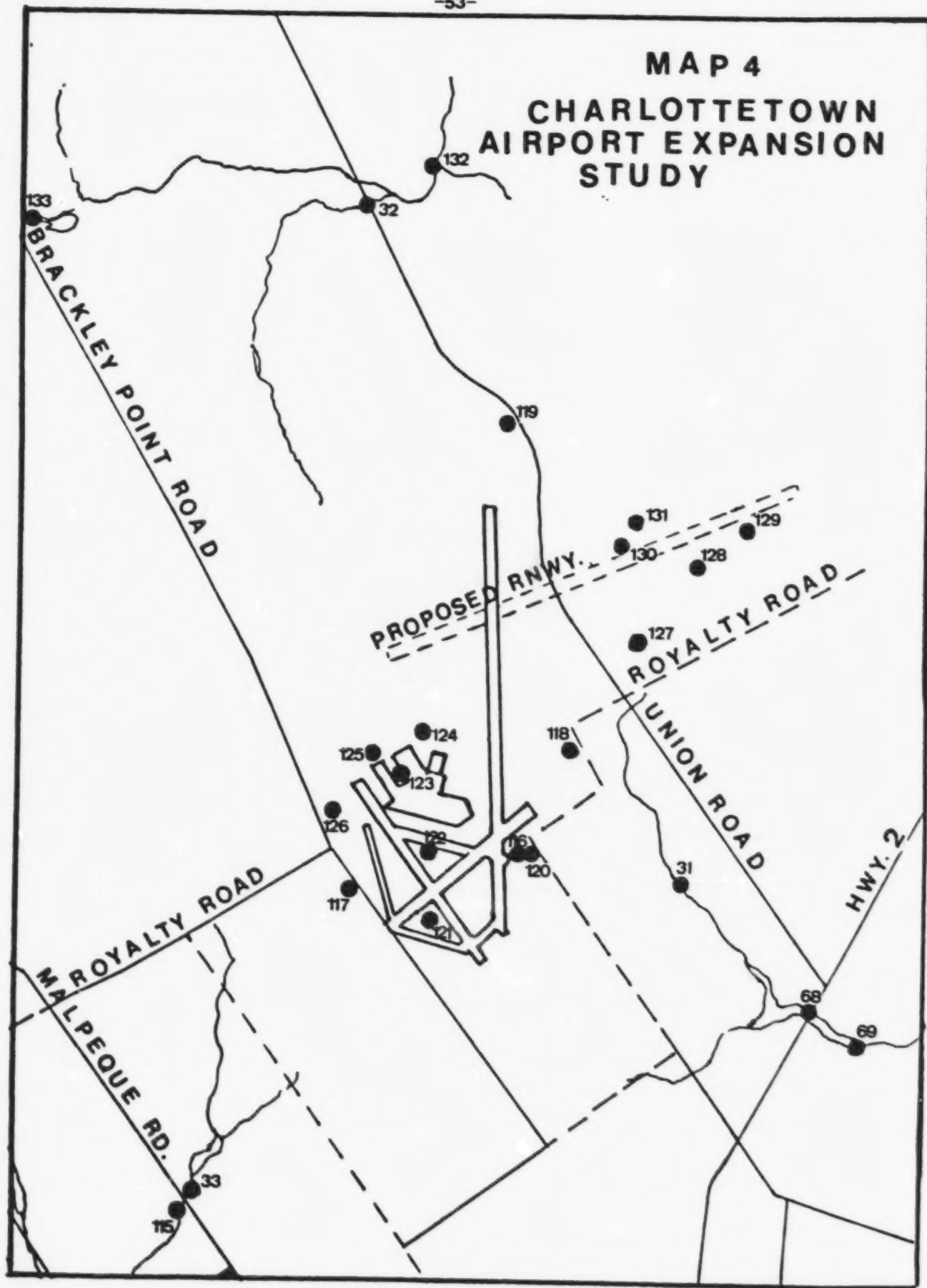
MAP 2
PRINCE EDWARD ISLAND
GROUNDWATER STUDY

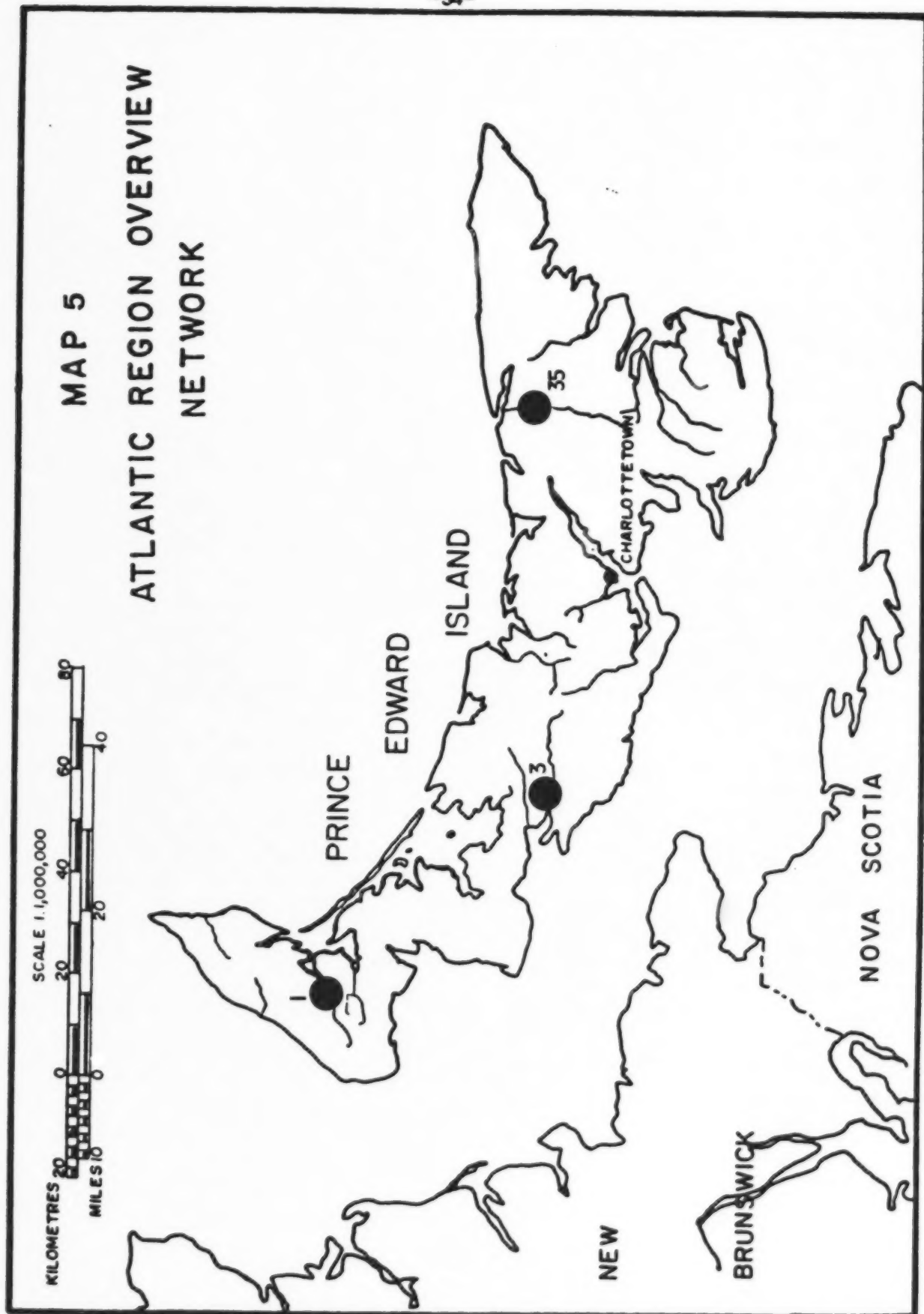


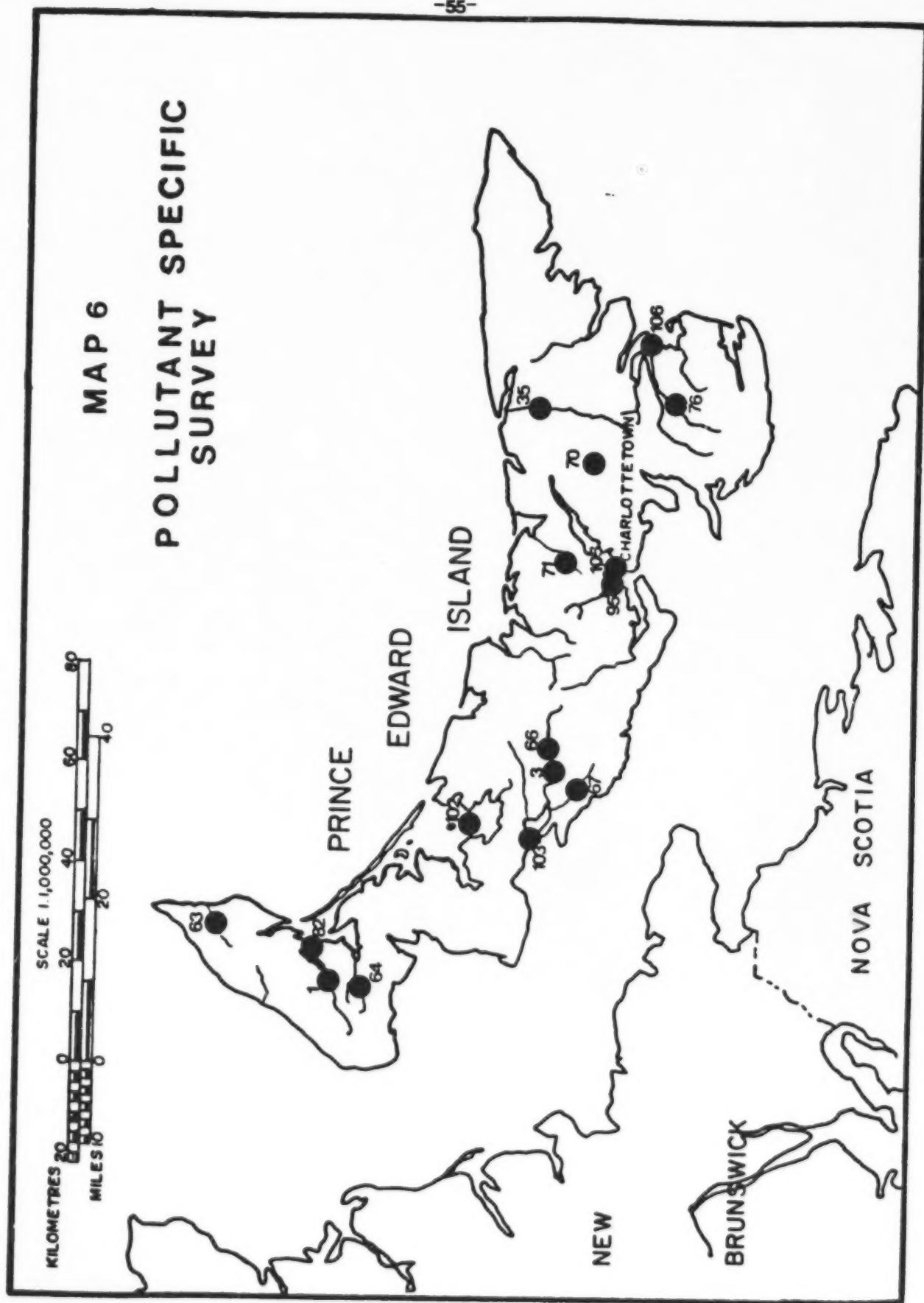
MAP 3
WATER QUALITY BRANCH
NATIONAL WATER QUALITY
MONITORING



MAP 4 CHARLOTTETOWN AIRPORT EXPANSION STUDY







MAP 7

ACID RAIN BASELINE
SAMPLING NETWORK

